CLAIMS

I claim:

1. A method for calibrating an infrared sensing devices, comprising:

a) storing a predetermined infrared detector output range in a control module;

b) emitting and detecting infrared radiation with a select infrared emitter/detector pair;

c) comparing the output value of said select infrared detector to said predetermined output range; and

d) calibrating multiple control modules by determining and storing an infrared emitter input value that produces an output value within said predetermined output range, using the same select infrared emitter/detector pair for the multiple control modules.

2. The method according to Claim 1 further comprising said computer storing said infrared emitter input value in said control module memory.

3. The method according to Claim 2 further comprising said control modules reprogramming itself to use said infrared emitter input value as a calibration standard for infrared detector output.

4. The method according to Claim 3 wherein said control module has a signal processor to measure said output of said infrared detector, to increase or decrease infrared radiation output of said infrared emitter, to measure said infrared emitter input value, and to send said emitter input value to a software database in said control module.

5. The method according to Claim 3 wherein said output of said infrared detector is electric current or electric voltage, or a combination thereof.

6. The method according to Claim 3 wherein said control module increases or decreases output of said infrared emitter by altering electric current or voltage or a combination thereof of an input signal to said infrared emitter.

7. The method according to Claim 3 wherein said select infrared emitter/detector pair comprises photodiodes.

8. The method according to Claim 3 wherein said select infrared emitter/detector pair is contained within a collar for calibration of an infrared automatic sensing flow system.

9. A method for calibrating infrared sensing devices, comprising:

a) measuring a first output of a single infrared detector in response to background and randomly reflected emitted infrared radiation;

b) measuring a second output of said single infrared detector in response to emitted infrared radiation from a single infrared emitter and reflected from a test object ;

c) subtracting said first output from said second output and storing the resulting net output of said infrared detector in one or more control modules;

d) comparing said net output of said infrared detector to a predetermined range of infrared detector output values in one or more control modules; and

e) increasing or decreasing infrared emitter input value in one or more control modules to provide an infrared emitter radiation output so that said net output of said infrared detector is within said predetermined infrared detector output range.

10. The method according to Claim 9 further comprising storing said infrared emitter input value in said control module memory.

11. The method according to Claim 10 further comprising said control module reprogramming itself to use said infrared emitter input value as a calibration standard for infrared detector output.

12. The method according to Claim 11 wherein said control module has a signal processor to measure said output of said infrared detector, to increase or decrease infrared radiation output of said infrared emitter, to measure said infrared emitter input value, and to send said emitter input value to a software database in said control module.

13. A method according to Claim 11 wherein said output of said infrared detector is electric current or electric voltage, or a combination thereof.

14. A method according to Claim 11 wherein said control module increases or decreases output of said infrared emitter by altering electric current or voltage or a combination thereof of an input signal to said infrared emitter.

15. A method according to Claim 11 wherein said infrared emitter and said infrared detector are photodiodes.

16. A method according to Claim 11 wherein said infrared emitter and said infrared detector are contained within a collar for calibration of an infrared automatic sensing flow system.

17. A method according to Claim 11 wherein said infrared emitter and said infrared detector can be used to calibrate a plurality of control modules.

18. A system for calibrating infrared sensing devices, comprising:

a) a single infrared emitter and a single infrared detector;

b) one or more programable control modules with memory and a calibration manager;

c) said control module having calibration data including a standard predetermined infrared detector output range of values; and

d) said calibration manager configured to provide an infrared emitter input value for said infrared emitter to produce an infrared emitter radiation output so that output from said infrared detector receiving said infrared radiation reflected from an object is within said predetermined infrared detector output range in one or more control modules.

19. The system according to Claim 18 wherein said control module is configured to further store said infrared emitter input value in said control module memory.

20. The system according to Claim 19 further comprising said control module reprogramming itself to use said infrared emitter input value as a calibration standard for infrared detector output.

21. The system according to Claim 20 wherein said control module has a signal processor to measure said output of said infrared detector, to increase or decrease infrared radiation output of said infrared emitter, to measure said infrared emitter input value, and to send said emitter input value to calibration data in said control module.

22. The system according to Claim 20 wherein said infrared emitter and said infrared detector are contained within a collar for calibration of an infrared automatic sensing flow system.

23. The system according to Claim 20 wherein said single infrared emitter and said single infrared detector are configured to calibrate a plurality of control modules.

24. The system according to Claim 20 wherein infrared detector output in response to background and randomly reflected emitted infrared radiation is subtracted from infrared detector output in response to emitted infrared radiation reflected from a test object to obtain a net infrared detector output.

25. The system according to Claim 24 wherein said control module provides an infrared emitter input value to produce a net infrared detector output equal to said predetermined infrared detector output range in said control module.

26. The system according to Claim 20 wherein infrared detector output in response to background and randomly reflected emitted infrared radiation is subtracted from infrared detector output in response to emitted infrared radiation reflected from a test object to obtain a net infrared detector output.

27. The system according to Claim 26 wherein said control module provides an infrared emitter input value to produce a net infrared detector output equal to said predetermined infrared detector output range in said control module.